

Method of Test for
IDENTIFICATION OF COLLAPSIBLE SILT
DOTD DESIGNATION: TR 435

I. Scope

- A. This method is intended to distinguish between stable silts and collapsible silts. The color criterion established herein must be augmented by at least one of the following criteria in order to characterize a silt as collapsible:
1. The in-place unit weight of the undisturbed silt is less than 80 lb/ft³ as determined by DOTD Designation TR 401.
 2. The maximum dry weight density is less than 104 lb/ft³ as determined in accordance with DOTD Designation TR 418. However, if the maximum dry weight density values (lb/ft³ or greater) of two silt samples from neighboring areas differ by 6 percent or more, and the sample with the lower density is characterized as collapsible by the Calgon color test, it shall be considered collapsible.
 3. The sample compresses at least 15 percent in height when consolidated in accordance with a modified version of AASHTO Designation T 216. Modification requires the use of an undisturbed core oven-dried at 140° ± 5° F and trimmed to fit the consolidation ring. A maximum load of 8 tons/ft² is applied with a load increment ratio of two, and then the load is reduced to 4 tons/ft², allowing the specimen to rebound. The specimen is then saturated under load and reloaded up to 16 tons/ft² for determining possible additional subsidence (collapse).

II. Apparatus

- A. Balance - A balance sensitive to 0.1 g.
- B. Beakers - Beakers of sufficient capacity for slaking samples.
- C. Stock Solution
1. The term "stock solution" as used herein shall consist of .08 lb. of Sodium Hexametaphosphate (trade name Calgon) plus sufficient distilled water to make 33 fl. oz. This solution should not be kept longer than two weeks.

III. Preparation

- A. Prepare approximately 1/2 lb. of minus No. 10 material in accordance with DOTD Designation TR 411.

IV. Procedure

- A. After preparation, the soil shall be maintained in an oven dry condition. If the soil has absorbed any moisture, oven dry in accordance with DOTD Designation TR 411 immediately prior to weighing sample. Weigh .22 lb. of prepared soil and place it into a beaker. Add 10.14 fl. oz. of stock solution to the sample and thus soak the soil for a minimum of 12 hours.
- B. Observe the color of the supernatant liquid after allowing the sample to settle for the minimum 12 hour period. A black color in the liquor is an indicator that the soil is collapsible. .

V. Reports

- A. Work sheets and reports for DOTD Designation TR 401, AASHTO Designation: T 216 (modified as explained in the Scope A (3) above), and DOTD Designation TR 418 should be annotated appropriately as follows:
"DOTD TR 435 indicates collapsible silt" or
"DOTD TR 435 indicates stable silt."

Normal testing time is two days.

NOTE 1: *In lieu of distilled water, water from municipal sources may be substituted provided 1. A sample has been submitted to the Materials Section and approved for this use. 2. A series of not less than ten samples have been run using both distilled water and tap water, and the Laboratory Engineer is assured of no variation due to the use of the tap water.*